L 11129-63
ACCESSION NR: AP3003971

are shown in Fig. 1 of the Enclosure along with the results calculated by the
method of moments (shown by the solid line). The measured spectra were found
to be in good agreement with theoretical results for all thicknesses of the
polyethylene layer at $E_n >$ 3Mev. At $E_n <$ 3Mev a divergence between the ex-
perimental and calculated results was noted. However, the tendency for a change
in spectra with an increase in layer thickness in this energy range was the
same for both calculated and experimental spectra. At neutron energies from 3
to 4 Mev and polyethylene thicknesses greater than 20 g/cm^2, the curve of the
measured spectra showed a sharper dip than that of the calculated spectra. This
is probably due to some inaccuracy in selecting or averaging the cross sections
during calculation. The sharper dip in the curve was also noted in neutron
spectra measured in water. "The authors thank their coworkers who serviced the
reactor and laboratory assistants who assisted in the carrying out of experi-
ments." Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 25Aug62   DATE ACQ: 08Aug63   ENCL: 01

SUB CODE: NS   NO REF SOV: 003   OTHER: 002
Card 2/2

ACCESSION NR: AT4019060   S/0000/63/000/000/0260/0270

AUTHOR: Avayev, V. N.; Vasil'yev, G. A.; Yegorov, Yu. A.; Kucheryayev, V. A.;
Orlov, Yu. V.; Pankrat'yev, Yu. V.; Panov, Ye. A

TITLE: Counters and dosimeters for the study of shielding and shielding properties of
materials

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of
reactor shielding, collection of articles). Moscow, Gosatomizdat, 1963, 260-270

TOPIC TAGS: counter, scintillation counter, dosimeter, shielding, reactor shielding,
nuclear reactor, gamma ray, neutron

ABSTRACT: In the study of the shielding properties of different materials and their com-
binations, it is important to know the following parameters: coefficients of attenuation of
γ-ray and neutron streams of different energies; coefficients of attenuation of the power
level of γ-radiation and fast neutorns; yield and spectrum of captured γ-radiation; acti-
vation of materials in a neutrons flux; and deformation of the γ-ray and neutron spectra
in their passage through the material. Since existing equipment is insufficient for shielding
studies, the authors built and tested a number of scintillation counters and dosimeters.

Card 1/3

ACCESSION NR: AT4019060

Among those described are a scintillation counter and spectrometer for the study of the attenuation of γ-ray flux, consisting of a FEU-11B photomultiplier with an NaI(Tl) crystal (diameter and height 40 mm) mounted in a housing lined with aluminum foil, and a scintillation neutron counter consisting of a FEU-11B photomultiplier with plastic scintillator of ZnS(Ag) + lucite (diameter 30, height 10 mm). For neutron energies ≥ 2 MeV, the γ-ray background is calibrated with a Co^{60} source and eliminated by the proper bias in the analyzer. A similar neutron counter can be used as a monitor. A light guide in conjunction with a smaller counter is used when the opening in the shielding is too small. This light guide is made of organic glass (length 60, diameter 10 mm) and is equipped with a light collector (Tove, P. A. Rev. of Sci. Inst. 27, 143 (1956)). For neutron energies between 1 and 10 Mev, a stilbene crystal is used (diameter 30, height 20 mm) equipped with the γ-discrimination arrangement described by H. W. Broch (Rev. Sci Instr. 31, 1063 (1960)). The detection efficiency for neutrons between 1 and 10 Mev is 10 - 2%. For thermal neutron detection, a FEU-29 or FEU-31 photomultiplier with an Li$_2$O- 3SiO$_2$ glass scintillator is used. Detection is based on the reaction Li^6 + n$\rightarrow$ α + H^3. The sensitivity of these counters to γ rays is calibrated by Zn^{65} to Co^{60} sources. All-wave-length neutron counters are constructed as gas counters (type SNM-5) filled with BF$_3$ and enclosed in paraffin, which is lined on the outside with cadmium. Dosimeters for fast neutrons are

Card 2/3

ACCESSION NR: AT4019060

made from plastic scintillators (polystyrene + terphenyl + ROROR) attached to a FEU-25 photomultiplier. The photomultiplier current is integrated and amplified by a direct current amplifier. The maximum sensitivity of this dosimeter is $0.2\ \mu$ F/sec per division. In order to eliminate γ-ray background, the measurements are made simultaneously with a γ-ray dosimeter which is a combination of the plastic and inorganic scintillators. A crystal of CsI(Tl) (volume $1.5\ cm^3$) is mounted on the axis of the plastic crystal (polystyrene + terphenyl + ROROR). Finally, a universal stand for detection and power supply is described. "The authors thank V. M. Isakov, D. I. Chupy*rin, A. I. Vasil'yev, V.N. Kozy*rev and Yu. G. Anisimov for taking part in the construction and adjustment of the apparatus." Orig. art. has: 9 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 14Aug63   DATE ACQ: 27Feb64   ENCL: 00

SUB CODE: NP   NO REF SOV: 015   OTHER: 004

Card 3/3

ACCESSION NR

AUTHOR: Vasil'yev, ... , Yegorov, Yu. A.,
Kul'varyayev, ...

TITLE: Attenuation of reactor radiation by serpentine concrete

SOURCE: Atomnaya energiya, v. , no. 2, 1965, 12,-12'

TOPIC TAGS: reactor radiation, radiation shielding, serpentine con-
crete, biological shielding, fast neutrons, gamma radiation, reactor
shielding

ABSTRACT: The shielding characteristics of concrete (density, 2.2 t/m^3)
with serpentine aggregate (introduced as sand or gravel) were studied
in a water-moderated water-cooled research reactor. The spatial flux
distribution of fast neutrons under conditions of semi-infinite geom-
etry was measured with radioactive threshold indicators made of in-
dium, phosphorus, and aluminum. Spectra of fast neutrons were meas-
ured behind concrete barriers 0, 10, 30, 60, and 100 cm thick, and it
was established that the greatest spectrum deformation takes place in
the 1—4-Mev region. In this energy region, sharp irregularities were

Card 1/2

L 26941-65

ACCESSION NR: AP5005802

noticed in a total cross section of neutron interaction calculated for
serpentine concrete. The results of measuring spectral neutron dis-
tribution can be used   for multigroup calcula-
tion of   in the   with
respect to neutrons,   serpentine
concrete investigated are   those of limonite con-
crete; with respect to gamma rays,   are the same.   heat-
ical composition of the   at temperatures over
480C, it can be recommended as   shielding in nuclear power
plants for temperatures up to 450C. Orig. art. has: 3 tables and
4 figures.   [AV]

ASSOCIATION: none

SUBMITTED: 21Feb64	ENCL: 00	SUB CODE: NP, MT
NO REF SOV: 012	OTHER: 001	ATD PRESS: 3189

Card 2/2

VASIL'YEV, G.A., kand. tekh. nauk (Rostov-na-Donu)

Hydrodynamic interrelation of the inlet apertures of baffles and of the area of sedimentation of horizontal settling tanks. Vod. i san. tekh. no.1:9-12   Ja '66.   (MIRA 19:1)

VASIL'YEV, G.A., kand. ekonom. nauk

Automatic lines composed of machine-tool units. Standarti-
zatsiia 29 no.6:7-9 Je '65.   (MIRA 18:12)

VASIL'YEV, G.A.: VESELKIN, A.P.; YEGOROV, Yu.A.; MOISEYEV, G.C.;
        PANKRAT'YEV, Yu.V.

        Moderation of reactor radiations in serpentine sand. Atom.
        energ. 19 no.4:354-359 0 '65.   (MIRA 18:11)

SUBMITTED: 10Jan64   ENCL. 0   SUB CODE: GP

Card 1/1

VASII'YEV G A

137 86

USSR/Electronics - Frequency Stabilizers   FD-2224

Card 1/1   Pub 90-4/12

Author   : Barchukov, A. I., Vasil'ev, G. A., Zhabotinskiy, M. E., Osipov. B. D.

Title   : Electromechanic klystron frequency stabilizer

Periodical   : Radiotekhnika, 10, 29-32, Mar 1955

Abstract   : The article describes results of testing an electromechanic klystron fre-
                quency stabilizer developed by the authors at the Physics Institute imeni
                P. N. Lebedev of the Academy of Sciences USSR in 1951. The aim of this
                research was to develop a stabilizer simple in construction and operation,
                which could also provide an easy means for the klystron frequency changes.
                To attain these prerequisites in a single block, the functions of cavity
                resonator and the discriminator were unified, and the modulation of reso-
                nant frequency of the cavity-resonator wavemeter was executed by means of a
                movable membrane.

Institution: Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

Submitted : 16 Apr 1954

VASIL'YEV, G. A.

"Investigation of the Transient Characteristics of Photo-Multipliers by
Means of a Micro-Oscillograph"

A conference on Electron and Phot-electron Multiplier; Radiotkehnika i
Elektronika, 1957, Vol. II, No. 12, pp. 1552 - 1557   (USSR)

Abst: A conference took place in Moscow during February 28 and March 6, 1957
and was attended by scientists and enginneers from Moscow, Leningrad, Kiev
and other centres of the Soviet Union. Altogether, 28 papers were read and
discussed.

VASIL YEV, G, A.

AUTHOR: Vasil'yev, G.A.   120-4-18/35

TITLE: Investigation of the Shape and Duration of Pulses from
          Photo-multipliers ФЭY-19M and ФЭY-1B Using a Micro-
          oscillograph (Issledovaniye formy i dlitel'nosti impul'sov
          fotoumnozhiteley FEU-19M and FEU-1V s pomoshch'yu mikro-
          ostsillografa)

ABSTRACT: The simplest method of investigation of the shape and
        duration of photo-multiplier pulses is direct oscillography.
        However, usual types of CRTs do not allow oscillograms of
        pulses with amplitudes $\sim$ 1 V to be obtained without using
        amplifiers, and the construction of amplifiers with a frequency
        band greater than 300 Mc/s presents quite a difficult problem.
        In this connection, micro-oscillographs are of interest because
        they permit a substantial increase in the deflection sensitivity
        but still preserve the necessary writing speed. Micro-oscillo-
        graphs have been known for some time (Ardenne, 1938) but have
        obtained only a limited application (Refs. 1 and 2) on account
        of the relatively complicated practical requirements. In this
        investigation, a micro-oscillographic tube with distributed
Card1/5 deflection systems, as developed by Ardenne and his colleagues

120-4-18/35

Investigation of the Shape and Duration of Pulses from Photo-
multipliers ФЭУ-19M and ФЭ У-1B using a Micro-oscillograph.

in 1954 ($R_{e}f.3$) was used. This tube has a deflection sensi-
tivity $\sim$ 0.25 V for the thickness of a line, which on a photo-
plate comprises 10 - 12 μ. The tube operates with an accelera-
ting voltage of 30 kV.
The deflection system consists of an artificial line (5 sections)
with a mean frequency of 2 600 Mc/s, terminated with its chara-
cteristic impedance (100 Ω). The reduction of the sensitivity
at 1 000 Mc/s is 5%. The investigated signal is fed to the
deflection system by a coaxial cable with a characteristic
impedance of 100 Ω.
A property of the micro-oscillograph is its very large writing
field in the horizontal direction (1 000 lines). Thus, with a
sweep time of 10^{-7}sec., a scanning speed of 10^{10} lines per sec.
is obtained which is sufficient for displaying pulses with
leading edge of 5×10^{-10} sec. and amplitudes 1 - 2 V.
For oscillography of photo-amplifier pulses which are statis-
tistically distributed in time, it is more satisfactory not to
use a waiting timebase, but to trigger the sweep generator
periodically (for example, at 50 c.p.s). To avoid super-
Card2/5 imposition of the oscillograms, it is necessary to move the

120-4-18/35

Investigation of the Shape and Duration of Pulses from Photo-multipliers ФЭУ-19М and ФЭУ-1Б using a Micro-oscillograph.

photo-film continuously in a vertical direction. In operation, a 5 cm length of film can contain up to 200 scans and register 5 - 10 random pulses. The method described was used for investigation of the shape and duration of black and scintillation pulses from the output of photo-multipliers of the types ФЭУ- 19M and ФЭУ-1B.

Fig. la shows a typical micro-oscillogram of a black (single-electron) pulse of the multiplier ФЭУ- 19M with a supply voltage of 2 600 V. The pulse has an amplitude of $\sim$ 2V (on a load of 100 Ω) and corresponds to an electron multiplication of 5×10^8. To increase the number of single-electron pulses, a source of γ-radiation (Co^{60}) with an intensity of 25 microcuries was placed near the photo-cathode.

Fig. lb shows a black pulse from the photo-multiplier ФЭУ- 1B (supply voltage 2 800 V). Each of the black pulses of large amplitude is accompanied by a pulse-satellite (Fig la and b). The experiments showed that this accompanying pulse is not due to the oscillographic circuits but arises in the photo-multiplier itself. The time interval between the fundamental pulse and the satellite is constant and is 7×10^{-9} sec. for photo-multiplier ФЭУ-19M and 8×10^{-9} sec. for the photo-multiplier

Card3/5

120-4-18/35
Investigation of the Shape and Duration of Pulses from Photo-multipliers ФЭУ-19M and ФЭУ-1B using a Micro-oscillograph.

ФЭУ-1B with supply voltages given above. This allows the supposition that the accompanying pulse arises due to optical feedback in the photo-multiplier.
Oscillograms of scintillation pulses were obtained in a similar manner with correspondingly lower supply voltages. The pulse parameters obtained from the oscillograms are given in the table. Comparing the duration of the leading edges of the black and scintillation pulses, it can be concluded that in the photo-multiplier ФЭУ-19M, the basic dispersion of the times of flight from the electrons arises on part of the photo-cathode - the first dinode.
Contrarily, in the photo-multiplier ФЭУ-1B, the dispersion is determined mainly by the electron multiplication system.
The duration of the edge of the scintillation pulse of the photo-multiplier ФЭУ-1B is 5 times shorter than that of ФЭУ-19M. Thus, with the use of the photo-multiplier ФЭУ-1B, the resolving time and the effectiveness of the coincidence circuits can be improved and also the times of flash of different scintillations can be measured directly. There are 1 figure, 1 table and 3 references, 1 of which is Slavic.
Card4/5

9, 4/60

66705

AUTHOR: Vasil'yev, G.A.

SOV/109-4-8-25/35

TITLE: Transient Characteristics of Photo-multipliers

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8,
          pp 1377 - 1380 (USSR)

ABSTRACT: The transient characteristics of a photo-multiplier are
        of practical importance in that they illustrate the time
        response of the system. Such characteristics can be
        easily determined indirectly. Thus, if A(t) is the
        response of a photo-multiplier to a scintillation pulse
        having a form exp(-t/T) , where T is the constant of
        the scintillator, the transient of the multiplier is
        given by:

$$h(t) = A(t) + \frac{1}{T} \int_0^t A(\xi)\,d\xi \qquad (1) \ .$$

        Therefore, the construction of the transient response
        is equivalent to the integration of the scintillation
        pulse response. On the other hand, by differentiating
Card1/3 Eq (1) with respect to t , it is possible to obtain the

66705
SOV/109-4-8-25/35

Transient Characteristics of Photo-multipliers

response of the device to a δ-function. Apart from the transient characteristic describing the overall performance of a photo-multiplier, it is necessary to measure the electron spread of the cathode system and the multiplication system separately. The transient response of the multiplication system can be found by integrating the shape of the "dark" pulse. The rise time of the cathode system can therefore be expressed by:

$$\tau_K = \sqrt{\tau^2 - \tau^2_{YMH}} \tag{3}$$

where τ represents the overall rise time of the multiplier and τ_{YMH} is the rise time of the multiplication system. The output pulses of three types of multipliers were investigated experimentally by employing a special oscillograph having a bandwidth of over 1 000 Mc/s and a sensitivity of 0.25 V/one-ray thickness. The investigated photo-multipliers were FEU-19; FEU-33 and FEU-1V. The scintillation response of the multipliers

Card2/3

66705

Transient Characteristics of Photo-multipliers SOV/109-4-8-25/35

is shown in the upper Figures, 2 and 3;   the transient
response is illustrated in the lower Figures, 2 and 3.
The upper curves of Figure 2 were taken by employing the
crystals of stilben or plastic scintillators. The upper
curves in Figure 3 illustrate the "dark" pulse response.
The numerical results obtained from the graphs of
Figures 2 and 3 are shown in the table on p 1379. From
the table, it is seen that the overall rise times for the
three multipliers range from 3.7 to 10.2 mμs.
There are 3 figures, 1 table and 4 references, of which
3 are Soviet and 1 English.

SUBMITTED: April 15, 1958

Card 3/3

AUTHOR: Vasil'yev, G.A.   SOV/120-59-5-16/46

TITLE: A Travelling-wave Cascade Voltage Multiplier

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 5,
            pp 75 - 80 (USSR)

ABSTRACT: The system, which is considered only theoretically, is
            that in which rectifier bridges are connected in series
            in an artificial line (Figure 1). Slater's equations
            (Microwave Transmission, New York, 1942) are applied;
            the maximum number of sections that can be used is given
            by the equation below Eq (7), in which η is the ratio
            of the wave impedances at the two ends of the line and
            $\xi = w/w_o$, where w is the working frequency and w_o is
            the cut-off frequency of the first section of the line.
            (Q has it usual meaning.) Eq (8) allows for the finite
            capacitance C_η of the bridge, etc; the factor b must
            be less than $2\sqrt{C/C_\eta}$ but must be more than $1/\eta$.

            Figure 2 shows the equivalent circuit of the line.
            The section containing Eq (9) deals with the best parameters;

Card 1/3

SOV/120-59-5-16/46

A Travelling-wave Cascade Voltage Multiplier

the voltage U_o applied to the sections is given in terms of P_o (the power supplied) and Z_o and the rectified voltage is given by Eq (10). Figure 3 shows how L and Z must vary along the line (n is the number of some section in the line and N is the total number of sections).

Eqs (11) to (13) are conditions to be satisfied for the theory to be applicable.

The next section deals with the ripple and regulation of the output; the phase shift in the best system reduces the ripple by about a factor 50. Figure 4 shows how the voltage is distributed along the line at no-load.

The next section reports briefly a few tests on a 50-section model, with $2C = 0.1$ μF, $L_o = 146$ μH, $L_n = 317$ μH, $Q = 40$ (at 300 kc/s, $Z_o = 54$ Ω, $Z_N = 80$ Ω, $\eta = 0.68$ and $f_o = 30$ kc/s. It is stated that the system worked adequately over the range 150 to 1 000 kc/s and

Card2/3   ✓

A Travelling-wave Cascade Voltage Multiplier   SOV/120-59-5-16/46

gave 5 kV at 2 mA.
The last section points out that this system has the
advantage that modern semiconductor rectifiers and ferrites
can be used to make the size and weight small, since there
are no components other than the insulators that have to
withstand high voltages.   There are 4 figures and
9 references, 3 of which Soviet, 2 Swiss and 4 English.

ASSOCIATION: Fizicheskiy Institut AN SSSR (Physical Institute of the AS USSR)

SUBMITTED: August 21, 1958

Card 3/3

S/105/61/000/012/003/006
E140/E963

AUTHOR: Vasil'yev, G.A.

TITLE: Tapered transmission lines for cascade voltage
               multipliers

PERIODICAL: Elektrichestvo, no.12, 1961, 54-59

TEXT: The author solves the equations of a tapered
artificial transmission line to determine the conditions under
which a cascaded voltage multiplier will have equal voltage
increments in each stage. The conditions for physical realiza-
bility of such circuits are obtained and it is found that it is
necessary to use LC filter sections. An example is given of a
tapered line in which the inductance increases and the capaci-
tance decreases with LC = const. With easily obtainable para-
meter values it was found that at 10 kc/s the number of stages
could be of the order of 100. There are 5 figures and 8 references
(4 Soviet-bloc and 4 non-Soviet bloc). The English-language
references read as follows: Ref.1: Everhart E., Lorrain P., The

Card 1/2

Tapered transmission lines ...   S/105/61/000/012/003/006
                                        E140/E963

Cockroft-Walton voltage multiplying circuit, Rev. Scient, Inscr ,
1953, No.24; Ref.8: Milnor J., The tapered transmission line,
Trans. of the AIEE, 1945, v.64.

ASSOCIATION: Fizicheskiy institut im. Lebedev AN SSSR
            (Physics Institute imeni Lebedev AS USSR)

SUBMITTED: August 19, 1961

Card 2/2

ZZ6U6

S/089/61/010/004/011/027
B102/B212

26, 2351
21, 2000

AUTHORS: Balabanov, Ye. M., Vasil'yev, G. A.

TITLE: A traveling-wave cascade generator - a new source for high-
              voltage supply of accelerator tubes

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 375-377

TEXT: Cascade generators which are well suited as a high-voltage source for
ion and electron accelerators (cf. B. S. Novikovskiy, Atomnaya energiya, 4,
vyp. 2, 175 (1958)) have the disadvantage of being very expensive and
consuming too much energy in their capacitors ($\sim 10^4$ joules). Since 1957 a
traveling-wave cascade generator suggested by Vasil'yev (Pribory i tekhnika
eksperimenta, no. 5, 75 (1959)) has been tested at the Fizicheskiy institut
AN SSSR (Institute of Physics, AS USSR). The circuit (Fig. 1) acts as an
LC-filter for the upper frequencies. The bridge rectifier in each stage
acts as an additional active load which leads to a decrease of the equivalent
factor of the coils. The cascade circuit acts analogously to a section of a
long traveling-wave line. In order to have an equal load on all voltage
rectifiers at a given current and in order to diminish the harmful power

Card 1/5

22608

S/089/61/010/004/011/027
B102/B212

A traveling-wave ...

leakage in the matching resistor R, the LC-filter has to be inhomogeneous.
The characteristic resistance of the cascade has to increase, which is
obtained by either increasing the inductance or by simultaneously increasing
the inductance and decreasing the capacitance of the discharge capacitors.
Such a circuit may have up to 1000 stages; nevertheless, the capacitance of
the capacitors in each stage are not lower than in standard circuits. The
dimensions of the induction coils for such a circuit have to be large. In
order to keep the dimensions of the whole unit within reasons, the coils
are made as flat, closely connected discs, each of which is inductivily
coupled with 10-20 stages. This design will also decrease the thermal
losses in the coils. In a traveling-wave generator circuit, the total pulsa-
tion will not exceed that of a single stage in its order of magnitude. A
considerable phase shift (100-150°) between the alternating voltages in
neighboring stages brings about a compensation of the pulsation. The
capacitance of a high-voltage electrode with respect to ground (several
10 μμf) is here considerably higher than the output capacitance of a multi-
plier circuit (10μμf). This also brings about a suppression of pulsations.
With ~0.01% this is within tolerable limits. In order to investigate the
properties of this cascade generator, the authors have built a unit

Card 2/5

S/089/61/010/004/011/027
B102/B212

.A traveling-wave ...

(schematically shown in Fig. 3) with 50 stages (250 kv, 1.5 ma, 7-10 kc/sec).
Each stage was 25 mm high. Ceramic capacitors of type KBKB-1 (KVKB-1) with
a rated capacitance of 68 μμf and selenium rectifiers of type ABC-7-3Π
(AVS-7-3P) have been used. The induction coils showed a quality factor of
Q = 100-120 at 8 kc/sec. Each stage of the filter column consisted of four
parallel-connected capacitors of the type ПOΞ (POV) with a total capacitance
of 1500 μμf. The unit has been used successfully for the voltage supply of
an accelerator tube. The following advantages of this circuit are
emphasized: 1) the possibility of using the same compressed gas for insula-
tion in the system and also as a dielectric in the capacitors; 2) low
response time (~ 10 μsec); 3) elimination of excessively high alternating
voltage of elevated frequency and of corona discharges associated with it;
4) facilitation of work with semiconductor rectifiers; 5) the possibility of
connecting the electrodes directly (without voltage divider) to the acceler-
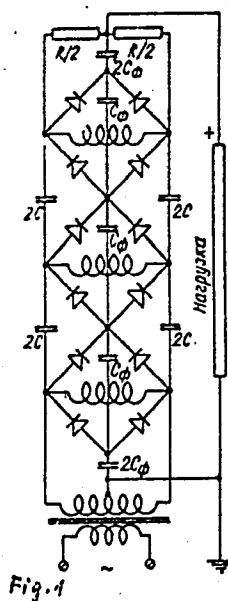ator tubes. There are 3 figures and 2 Soviet-bloc references.

SUBMITTED: September 22, 1960

Card 3/5

A traveling-wave ..

Legend to Fig. 1: R - matching resistor;
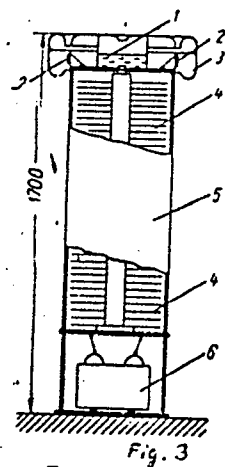2C - discharge capacitors;
C_ϕ - filter capacitors.

S/089/61/010/004/011/027
B102/B212

Fig.1

Card 4/5

A traveling-wave ...

S/089/61/010/004/011/027
B102/B212

Legend to Fig. 3: 1) "oil expander";
2) matching resistor; 3) protective
electrode; 4) cascade multiplier
circuit; 5) paper-bakelite tube
filled with pure transformer oil;
6) 4-kv ferrite transformer.

Fig. 3

Card 5/5

q.3230

S/105/62/000/004/001/002
E192/E482

AUTHOR: Vasil'yev, G.A.

TITLE: Distributed network bandpass filter with inductive-
             capacitative coupling

PERIODICAL: Elektrichestvo, no.4, 1962, 45-49

TEXT: A multi-section travelling-wave LC network can give
voltage multiplication exceeding 100.   Constructional
considerations favour pancake coils; mutual coupling within groups
of 10 to 20 coils give delay-line characteristics.   With
adjoining coils oppositely wound, the cut-off frequency is reduced
and the circuit calculations become those for a distributed
transformer.   Attenuation, phase-shift and loss curves were
thus determined and verified experimentally.   Comparison with
curves for lumped LC filter networks proved that the loss in the
coils was reduced by their mutual coupling.   In a specimen
calculation, coils with self-inductance $L = 1$ henry and
capacitances $2C = 140$ picofarads gave a cut-off frequency of
4 kc/s, a load impedance of 45000 ohms at 10 kc/s and a linear
Card 1/2

S/105/62/000/004/001/002
E192/E482

Distributed network ...

bandpass width from 5 to 15 kc/s.   Measurements on networks of
20 to 30 coils showed that the terminations needed inductive
impedances having a self-inductance 1.5 to 3 times greater than
that of the intermediate coils.   For minimum attenuation
throughout and a high magnification with a given capacitance, the
coils, though geometrically similar, had differing numbers of
turns.   Suggested uses of the network are: series magnification,
HF power supply and transmission of signals to h.v.d.c. circuits;
efficiencies of 50 to 70% are expected.
There are 5 figures.

ASSOCIATION: Fizicheskiy institut im. Lebedeva AN SSSR
             (Physics Institute imeni Lebedev AS USSR)

SUBMITTED: December 30, 1961

Card 2/2

L 44314-66   EWT(1)   SCTB   DD

ACC NR: AP6029426   SOURCE CODE: UR/0205/66/006/004/0618/0619

AUTHOR: Vasil'yev, G. A.; Medvedev, Yu. A.   /4/

ORG: State Institute for the Advanced Training of Physicians im. S. M. Kirov,
Leningrad (Gosudarstvennyy institut usovershenstvovaniya vrachey)

TITLE: The role of the adrenal cortex in increasing resistance of x-ray irradiated
white mice to acute hypoxia

SOURCE: Radiobiologiya, v. 6, no. 4, 1966, 618-619

TOPIC TAGS: hypoxia, x ray radiation biologic effect, adrenal gland, radiation
tolerance, mouse

ABSTRACT: The effect of x-ray irradiation on resistance to acute (anoxic, anemic,
and histotoxic) hypoxia was studied in experiments on white mice irradiated with
doses of 50, 100, 200, 500, 700, and 1000 r and observed 3 hr, and 1, 2, 3, 5, 6, and
10 days after irradiation. The content and distribution of sudanophilic and anisotro-
pic lipids in the adrenal cortex, and the weight coefficient and size of the adrenals
of 50 irradiated mice were determined. Results on the survival of irradiated animals
are presented in Table 1. Resistance to acute anoxic hypoxia was increased by doses
from 200 to 700 r; the increase was observed by the third hr after 700-r irradiation
and lasted 50 days. Resistance to CO and potassium cyanide was also significantly
increased by the 700-r dose. Smaller (50- and 100-r) and larger (1000-r) doses gave

Card 1/3   UDC: 612.014.48

ACC NR: AP6029426

Table 1. The effect of x-ray irradiation
on survival of white mice in conditions of general hypoxia.

Experimental conditions	Experimental Group		Control Group	
	Survived	Died	Survived	Died
Pressure chamber exposures for 10—12 min at an ambient pressure of 120 mm Hg, beginning 3 hr after 700-r irradiation (29	17 26	12	8	21
The same after 1 day (47)	26	16	13	29
· 2 days (40)	14	26	8	32
5 days (25)	14	11	10	15
6 days (25)	9	16	11	14
10 days (24)	4	20	8	16
Pressure chamber exposures 1 day after 50-r irradiation (15)	5	10	6	9
100 r (20)	8	12	10	10
200 r (20)	11	9	7	13
500 r (25)	14	11	8	17
1000 r (15)	4	11	5	10
Exposure to CO (8 mg/1 for 40 min 1 day after 700-r irradiation (20)	15	5	9	11
Potassium cyanide injection (5 mg (5 mg/kg subcutaneously), 1 day after 700-r irradiation (14)	9	5	4	10

Note: Number of animals, in parentheses, was the same for
experimental and control groups.

Table 1. The effect of x-ray irradiation on
survival of white mice in conditions of general hypoxia

Card 2/3

ACC NR: AP6029426

no protection. No changes were noted in the weight coefficient or size of the adrenal cortex in mice examined one day after 100- and 1000-r irradiation. The 700-r dose produced statistically significant hypertrophy of the cortex and an increase in weight coefficient by the third postirradiation hr, with the weight coefficient reaching twice normal value by the 2nd, 3rd, 4th, 6th, and 10th postirradiation days. A slight decrease in sudanophilic and increase in anisotropic lipoids was observed in the external branches of the fascicular cortical zone in animals examined the first day after 100-r irradiation, compared to a sharp drop in anisotropic lipoid content and change in the aggregate lipoid state of the protoplasm of the fascicular cells with the 1000-r dose. The 700-r dose produced a gradual decrease in sudanophilic and anisotropic lipoid content from the third hr to the fourth day after irradiation when it reached zero, and a sharp increase on the 6th and 10th postirradiation days, thus confirming an increase in functional activity of the adrenal cortex for the first four days after 700-r irradiation. It was concluded from a comparison of data that the increased resistance of irradiated mice to different types of hypoxia is a non-specific reaction effected through the adrenal cortex. Orig. art. has: 1 table. [SW]

SUB CODE: 06/ SUBM DATE: none/ ATD PRESS: 5073

Card 3/3

VASIL'YEV, G.A.; MEDVEDEV, Yu.A.; PROZOROVSKIY, V.B.; MALYUGINA, L.V.

Effect of acclimatization to hypoxia on the growth and radiosensitivity of rat lymphosarcoma. Med. rad. 10 no.6:36-41 Je '65.
(MIRA 18:6)

1. Kurs farmakologii (zav. V.B. Prozorovskiy) pri kafedre patofiziologii i farmakologii (zav. - prof. S.F. Senderikhin) Petrozavodskogo gosudarstvennogo universiteta.

PHASE I BOOK EXPLOITATION   SOV/5916

Triunov, L. A., G. A. Vasil'yev, and V. P. Paribok

Protivoluchevyye sredstva; spravochnik (Antiradiation Measures; Handbook)
    Moscow, Izd-vo AN SSSR, 1961.   171 p.   Errata slip inserted.   5000 copies
    printed.

Sponsoring Agency: Akademiya nauk SSSR.   Institut tsitologii.

Ed.:   V. P. Paribok, Doctor of Medical Sciences, Professor; Tech.
    Ed.:   R. A. Zamarayeva.

PURPOSE: This handbook is intended for physicians, public health doctors,
    and medical research workers who are specializing in radiation medicine.

COVERAGE: The book contains data on more than 500 antiradiation preparations
    which have been tested with varying degrees of success on different types
    of animals, plants, microorganisms, etc.   to determine their effectiveness
    as prophylactic agents against radiation affections.   The authors have

Card 1/8

Antiradiation Measures; Handbook   SOV/5916

attempted to present in summary form the most important data published to
date in the field and to provide a ready guide or standard for measuring
the effectiveness of the more recent antiradiation preparations as they
are developed. The material is arranged in alphabetical order. In the
absence of any special definition, radiation means x-radiation. No
personalities are mentioned. Some references appear in the text.

TABLE OF CONTENTS:

Card 2/3

VASIL'YEV, G.A.

Antibiotic therapy in radiation injury. Voen.-med. zhur. no.6:26-
31 Je '61.
(RADIATION SICKNESS)   (ANTIBIOTICS)   (MIRA 14:8)

41844
S/205/62/002/004/004/014
I015/I215

27.1220

AUTHORS: Tiunov,L.A., Vasil'yev,G.A., and Smirnova,O.I.
(Leningrad)

TITLE: The effect of lethal X-ray doses on the blood
catalase activity

PERIODICAL: Radiobiologiya,v.2, no.4, 1962, 548-552

TEXT: There are contradictory reports in medical literature about
the effect of radiation injuries on the catalase activity in blood.
Experiments were carried out on 10 female dogs weighing 14-17 kg.
The animals were X-irradiated from two PYM -3 (RUM-3) apparatuses
simultaneously. The dose rate from apparatus No.1 was 12r/min.
and that from No.2, 10r/min, up to a total dose of 600-650r. The
blood catalase activity was determined every 5-10 min during one
hour after irradiation. It was subsequently determined every
second day during the entire observation period. The activity
of catalase was measured manganometrically, according to the method
of Bakh and Zubkova. Twenty days after irradiation, only one of

Card 1/2

S/205/62/002/004/004/014
I015/I215

The effect of lethal X-ray doses...

the dogs survived. The other animals survived on an average 14.9
days. The blood catalase activity decreased within 5 min after
irradiation, and reached its maximum decrease after 20-30 min.
The low activity level remained during the subsequent days, with
a maximum decrease on the 18th day (one third of the normal). It
is assumed that the "catalase mechanism" is related to the primary
reactions of the organism to radiation injuries. There are 2
figures.

SUBMITTED: February 5, 1962

Card 2/2

VASIL'YEV, G.A.; BELYAYEV, V.A.

Protective effect against X rays of the adaptation to hypoxia
in combination with an acute hypoxia. Radiobiologiia 3 no.1:
117-120 '63.   (MIRA 16:2)
          (ANOXEMIA) (X RAYS—PHYSIOLOGICAL EFFECT)

YEVDOKIMOV, Aleksandr Ivanovich; VASIL'YEV, Georgiy Andreyevich;
        Prinimal uchastiye ZAUSAYEV, V.I., dots.; PROKHONCHUKOV,
        A.A., red.

        [Surgical stomatology] Khirurgicheskaia stomatologiia. Izd.2.
        perer. Moskva, Meditsina, 1964. 481 p.   (MIRA 17:7)

VASILYEV, G. A.

"Tenth Meeting on Problems in Physiology."
Doctor of Biological Science.
Vest. Ak. Nauk SSSR, No. 6, 1944.

Report U-1551, 7 November 1951.

VASIL'YEV, G. A.

Doctor of Biological Sciences

"Proceedings of the General Assembly of the Academy Science, USSR 14-17,
October 1944" Vest. Ak. Nauk SSSR, No. 11-12, 1944.

BR-52059019

VASIL'EV, G. A.

"Thorndike's method of problem cells and the method of conditioned reflexes."
by Vasil'ev, G. A. (p. 295)

SO: Journal of General Biology(Zhurnal Obshchei Biologii) Vol. X, No. 4, 1949

VASIL'YEV, G. A.

29823

Nyekotoryye osobye-nnosti vysshyey nyervnoy droyatyel' nosti Losh-adyey. Fiziol. zhurnal SSSR. Im. Syechye-nova, 1949, No. 5, S. 525-34

GOLUBYEVA, N. M.

Sm. 29824

SO: LETOPIS' NO. 40

VASILYEV, G. A. I

7881.   VASILYEV, G. A. I Vasil'chenko G. S. Izucheniye eksperimental'nykh
nevrozov v ssha. (Po materialam konferentsii 1952 g. v N'yu-yorke). M.,
Medgiz, 1954. 60 s. 22 sm. 5.000 EKZ. 1R. 60 K.—(55-3572) P

612.82 / 616.8

SO: Knizhnaya Letopis', Vol. 7, 1955

VASIL'YEV, G.A.

Considerations on Penfield's hypothesis of the interrelations
between the cerebral cortex and subcortex in the mechanism of memory.
Zhur.nevr. i psikh. 56 no.7:587-591 '56.   (MIRA 9:9)

1. Laboratoriya eksperimental'noy patofiziologii vysshey nervnoy
dyatel'nosti zhivotnykh (zav. prof. B.N.Klosovskiy) Instituta
nevrologii AMN SSSR (dir. prof. N.V.Konovalov), Moskva.
        (CEREBRAL CORTEX, physiology,
           cortico-subcortical relation in memory (Rus))
        (BRAIN, physiology,
           same)
        (MEMORY,
           cortico-subcortical relation in (Rus))

VASILYEV, G. A.

EXCERPTA MEDICA Sec 2 Vol 12/1   Physiology   Jan 59

14   INCREASED RESISTANCE OF ANIMALS TO X-RAY IRRADIATION AS A
RESULT OF ACCLIMATIZATION TO HYPOXIA AT NORMAL BARO-
METRIC PRESSURE (Russian text) - Vasiliev G. A. - BJULL. EKSP.
BIOL. MED. 1958, 45/2 (46-49) Tables 2
Resistance of white mice to subsequent irradiation by X-rays was increased by
acclimatization to hypoxia without lowering of barometric pressure. The activity
of catalase in the blood and organs of acclimatized animals was increased. (II, 14)

VASIL'YEV, G.A.

Acclimatization to hypoxia associated with the administration
of cystamine and cyst eamine as a method for preventing radiation
sickness [with summary in English]. Med.rad. 4 no.1:41-44 Ja '59.

(MIRA 12:2)

(MERCAPTOETHYLAMINES,
cystamine & systeamine ther. with anoxic acclima-
tization in radiation protection in animals (Rus))
(RADIATION PROTECTION,
cystamine & cysteamine ther. with anoxic acclima-
tization in animals (Rus))
(ANOXIA, exper.
acclimatization with cystamine & cysteamine ther.
in radiation protection (Rus))

KLOSOVSKIY, B.N., prof.; VOLZHINA, N.S.; VASIL'YEV, G.A. (Moskva)

Physiology of the optic thalamus. Vop.neirokhir. 23 no.6:1-6
N-D '59.   (MIRA 13:4)

1. Laboratoriya po izucheniyu razvitiya mozga Instituta pediatrii
AMN SSSR i laboratoriya patofiziologii vysshey nervnoy deyatel'-
nosti Instituta nevrologii AMN SSSR. 2. Chlen-korrespondent AMN
SSSR (for Klosovskiy).
            (THALAMUS physiol.)

KLOSOVSKIY, B. N.; VASIL'YEV, G. A.; VOLZHINA, N. S.

Sequelae in extirpation of the optic thalami; technique for
their removal, nervous status, behavior and conditioned reflex
activity of dogs lacking the optic thalami. Nauch. trudy Inst.
nevr. AMN SSSR no.1:364-372 '60.   (MIRA 15:7)

1. Institut nevrologii AMN SSSR i Institut pediatrii AMN SSSR.

(OPTIC THALAMUS—SURGERY)
(CONDITIONED RESPONSE)

VASIL'YEV, G.A.

USSR .

River water as source of salt accumulation in the El'ton Lake. G. A. Vasil'ev. *Trudy Vsesoyuz. Nauch.-Issled. Inst. Galurgii* No. 28, 104-13(1953); *Referat. Zhur. Khim.* 1954, No. 37561.—The hydrographic properties of the basins of the 7 rivers emptying into the El'ton Lake are given. The amt. of salts and the kinds brought in by these rivers is indicated.   M. Hosch

VASIL'YEV, G. A.

"Thermal Regime of the Bottom Brine in the Upper Salt Strata of Lake El'ton"
Tr. Vses. N. -I. In-ta Galurgii, No 28, 114-117, 1953

Investigations of salt deposits and mineral waters. The author publishes the results of works carried out by the All-Union Scientific Research In-stitue of Halurgy in 1948-1950. The temperatures of the bottom brine for 1949 at various depths according to observations in 10 wells are presented in a table. The characteristic feature of brine temperatures of a lake is the small variation of the mean yearly temperature with depth and the strong smoothing out of the amplitude of mean monthly temperatures with increasing depth of the layer. (RZhGeol, No 3, 1954)

SO: W-31187, 8 Mar 55

VASIL'YEV, G. A.

"Hydrogeological Characteristics and Hydrochemical Con-
ditions of the El'ton Lake." Leningrad Order of Lenin and Order of
Labor Red Banner Mining Inst, Leningrad, 1955. (Dissertation for
the Degree of Candidate in Geological and Mineralogical Sciences)

SO: M-955, 16 Feb 56

VASIL'YEV, G.A.

Hydrochemical characteristics of surface brines of Lake El'ton.
Trudy VNIIG 32:34-48 '56.   (MIRA 11:1)
           (El'ton, Lake--Brines)

DZENS-LITOVSKIY, A.I.; VASIL'YEV, G.A.

    Geologic conditions governing the formation of bottom sediments in
Kara-Bogaz-Gol in connection with fluctuations in the Caspian Sea
level. Izv.AN SSSR.Ser.geol. no.3:101-109 Mr '61. (MIRA 15:2)

    1. Vsesoyuznyy nauchno-issledovatel'skiy institut galurgii, Leningrad.
      (Kara-Bogaz-Gol (Gulf)--Deep-sea deposits) (Caspian Sea)

L 28032-66   EPF(n)-2/EWT(m)/ETC(f)/EWG(m)

ACC NR: AP5026441   SOURCE CODE: UR/0089/65/019/004/0354/0359

AUTHOR: Vasil'yev, G. A.; Veselkin, A. P.; Yegorov, Yu. A.; Moiseyev, G. G.; Pankrat'yev, Yu. V.

ORG: None

TITLE: Attenuation of pile radiation in serpentinite sand

SOURCE: Atomnaya energiya, v. 19, no. 4, 1965, 354-359

TOPIC TAGS: nuclear reactor material, nuclear reactor shield

ABSTRACT: The use of serpentine rock for biological shielding is discussed. This mineral is found widely distributed in the Urals, Caucasus, Siberia and Kazakhstan, usually associated with asbestos deposits such as the Bazhenov quarries where pure serpentinite monoliths of about 1 cu m were excavated. Its bound water is liberated only at temperatures exceeding 450° C. Thus it can be used as a heat-resisting material for biological shielding. The concentration of hydrogen nuclei in serpentite being about 1.5% by weight, is quite sufficient for insuring the attenuation of fluxes composed of intermediate and fast neutrons. The density of monolithic serpentinite is about 2.6 ton/cu m while the thermal conductivity varies between 2.16 and 2.56 kcal/m.hr. C. This material could be easily cut. The compression strength of blocks made of serpen-

Card 1/3   UDC: 621.039.538.4

L 28032-66

ACC NR: AP5026441

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tinite reaches 600 kg/sq cm. The shielding properties of serpentinite fine sand (from Bazhenov deposits) were tested in a water-cooled and water-moderated research reactor. The boxes filled with sand were placed close to the core vessel. The maximum thickness was about 180 cm. The sand density was 1.62 ton/cu m. The chemical composition given in a table shows that the serpentite sand includes 38.83% of SiO_2 and 37.39% of MgO. The investigations were carried out assumming "semi-infinite" and "energy barrier" geometry. The method of induced activity was used for determining the neutron flux attenuation, while the gamma dose rate was measured by means of a scintillation dosimeter. The macroscopic cross-section for fast neutrons in sand was calculated as 0.0602 cm^{-1} of which 45% was due to oxygen and 21% to hydrogen. The variations of cross sections in serpentite and its main components for different levels of fast neutron energy was shown in a graph. The peaks and dips in curves reflected the dependence of cross-sections upon the presence of oxygen. The attenuation of fast neutrons calculated on the basis of threshold measurements is also graphically illustrated. From these graphs and a table, it follows that the relaxation of neutron in serpentite sand is the same as in boron carbide. The protective properties of serpentite monolithical blocks are considerably higher than those of iron ore concentrates and only slightly better than those of serpentinous concrete. The spectra of fast neutrons were also determined and the

Card 2/3

L 28032-66

ACC NR: AP5026441

energy distributions at 0, 30, 60, 100 and 140-cm thickness were plotted for various values of neutron flux. The greatest changes were observed for energy levels from 3 to 8 Mev. The relaxation length varies from 14.9 to 17 cm. The flux attenuation for thermal and epithermal neutrons was also investigated. A certain accumulation of neutrons was observed at small serpentite thicknesses. The relaxation was about 15.2 cm. This length is smaller than that (about 20 cm) obtained for iron ore concentrates. The attenuation of dose rates of fast and intermediate neutrons was the same for tested layer thicknesses. The dose relaxation was 15.2 cm. The gamma dose attenuation was 22 cm for a serpentite layer of 270 g/sq cm. The experiments showed that the serpentite sand is as good as the boron carbide. In conclusion, it was stated that the serpentite is not as good as the iron ore concentrate, although the monolithic serpentite has a lower relaxation length. The serpentite shielding properties could be improved by using a mixture consisting of 25% of serpentite and 75% of iron. The full neutron dose relaxation will be about 9 cm. ORIG. art. has: 4 tables and 5 graphs.

SUB CODE: 18 / SUBM DATE: 29Jan65 / ORIG REF: 11 / OTH REF: 5

Card 3/3 cc

VASIL'YEV, G.D.; TRAVINA, I.O,

Some materials on the exploration of spawning grounds of Atlanto-
Scandinavian herring in April and May [1959]. Trudy BaltNIRO
no.7:63-66 '61.   (MIRA 15:2)
                            (North Sea--Herring)

Substituting fire clay with bentonite in foundry sand for steel casting. G. D. Vasıl'ev. *Litelnoe Delo*, 1940, No. 11–12, pp. 23–26; *Khim.-Referat. Zhur.*, 4 [6] 97 (1941).—A molding sand containing bentonite was investigated first in the laboratory and then under plant conditions. The mix had the following composition: prepared soil 75.1, quartz sand 21.2, and a 35%; bentonite suspension 3.6 or dry bentonite 1.27%. The use of the bentonite mix for steel casting eliminated the necessity of drying and painting the mold, sprinkling with a bonding material, and the use of kerosene. The use of the bentonite mix resulted in less work in the polishing department.

                                       M. Ho

VASIL'YEV, G. D.

USSR/Engineering - Foundry, Equipment   Jan 51

"Vacuum Pouring by the Method of Selective Suction of Gases," G. D. Vasil'yev, A. M. Polevaya, Engineers, Orgavtoprom

"Litey Proiz" No 1, pp 30, 31

Method is used at Gor'kiy Automobile Plant for casting GAZ-51 cyl blocks. It considerably decreases rejection of castings (sometimes by 30%) and permits use of molding and core mixts of increased strength. Installation basically consists of 4 flexible steel hoses attached to

USSR/Engineering - Foundry, Equipment   Jan 51
            (Contd)

collector, which is connected to suction pump, and vacuum chamber to be installed on mold. Describes procedure and equipment.

185T45

185T45

185T49

USSR/ Engineering - Foundry, Equipment   Feb 51

"Gas Cupola for Producing Cast Iron and Steel,"
G. D. Vasil'yev, Orgavtoprom

"Litey Proiz" No 2, 19, 20

Exptl cupola 300 mm in diam is equipped with 4 flame-
less burners and incorporates forehearth, heated with
5 flameless burners, air for which is preheated in 2-
sec pipe recuperator. Furnace permits obtaining cast
iron with temp of 1,500-1,5200 in ladle, eliminating
necessity of overheating metal in elec furnaces.
Productive capacity was 400 kg/hr, corr to gas con-
sumption of 130 cu m per ton of metal produced.
Graphitized steel was also made in this furnace.

185T49

Casting Automobile and Tractor Sleeves in Thin-Walled Moulds. P. N. Aksenov, G. D. Vasil'ev, A. S. Ek'seev, and B. V. Rabinovich. (Liteinoe Proizvodstvo, 1953, (9), 1-6). [In Russian]. Details are given of the production of sleeves for internal combustion engines by B. V. Rabinovich's method of casting in metal moulds faced with a thin layer of refractory material. For this, a sand-clay-coal mixture is applied by means of a blast at 6 atm. pressure. Temperature distribution in the coating, refractory layer and mould is considered, and curves are given for various thicknesses of these. The micro-structure of castings obtained is compared with those produced centrifugally and a wide range of possible applications for steel and cast iron is claimed for the new method. Improvements in the process at present being investigated are outlined.—B. K.

VASIL'YEV, G.D., inzhener; VITKIND, L.M., inzhener; MODEL', B.I.,
teknicheskiy redaktor

[Oilless binder "P" for core production] Sterzhnevoi bezmaslianyi
krepitel' "P". Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit.
i sudostroit. lit-ry, 1954. 49 p.   (MLRA 7:8)

1. Moscow. Gosudarstvennyy Vsesoyuznyy institut avtomobil'noy
tekhnologii.
          (Founding)

VASIL'ev, G.F.

USSR/Electronics - Electronic and Ionic Emission   H-2

Abs Jour   :   Referat Zhur - Fizika, No 5, 1957, 12282

Author   :   Yelinson, M.I., Vasil'ev, G.F.
Inst   :   -
Title   :   Cold Cathode Emission of Tantalum.

Orig Pub   :   Zh. tekhn. fiziki, 1956, 26, No 8, 1669-1670

Abstract   :   Short results are given on the investigation of the emis-
               sion from tantalum points 0.3 -- 0.8 micron in diameter.
               The investigations were made by means of a spherical or
               conical Mueller projector.

Card 1/1

PA - 2576

Study of the method applied for reduction of autocathode
bombardment by the ions of residual gases.

vantages. The various technological methods worked out by the
authors are described. These methods permit all operations to
be undertaken with high accuracy and convenience. The process
of electrochemically cauterizing the wire point was especially
simplified. The various experiments are described, e.g.
1. with active adsorbing films by means of two different
   methods,
2. experiments of bombarding points of pure tungsten with
   mercury ions, and
3. tests for the determination of the life of valves and the
   peculiarities of emission connected herewith.
   The system with a strong asymmetric configuration of the
electric field is the best means of reducing the detrimental
effect of ion bombardment.
(21 illustrations)

ASSOCIATION: not given.
PRESENTED BY: -
SUBMITTED: 30. 7. 1956
AVAILABLE: Library of Congress.

CARD 2/2

$VASIL'YEV, G.F.$

PA - 2598

AUTHOR: ELINSON,M.I., VASIL'YEV,G.F.

TITLE: Experimental Research of the Field Emission of Hexaborid Lantan. (Eksperimental'noye issledovaniye avtoelektronnoy emissii geksaborida lantana, Russian)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol 2, Nr 3, pp 348 - 350 (U.S.S.R.)

Received: 5 / 1957   Reviewed: 6 / 1957

ABSTRACT: Compressed and caked together rods of LaB_6 with a diameter of 1 mm and a length of 15 mm served as initial object. In- vestigation of the emission characteristics was carried out in autoelectron diodes. The usual measuring scheme was used. At some of the characteristics a tendency towards saturation was observed. Between these sections there are some "steps". It was shown that these "steps" are not connected with any nonreversible pheno- mena whatever. The appearance of the characteristics confirms that the borid, cooled to room temperature (after a treatment at high temperature), at least in the layer bordering on the surface, is a semiconductor. The existence of several steps (and not, as it ought to be according to the theory by R.Stratton (Proc.Phys.Soc. B., 1955, 68, 430 B, 746 - 757) only one) may be connected with the fact that for different places of the emitter the electric field is different and the breaf-through of the barrier takes place successively at different places and at different orders of u.

Card 1/2

PA - 2598

Experimental Research of the Field Emission of Hexaborid Lantan.

It is, however, also possible that these steps are connedted with the polycrystalline shape or with the presence of some energy levels of the electrons on the surface. Preliminary experiments showed that the LaB_6 emitter possesses sufficient stability. At present further investigations of the substances described are being carried out. (4 illustrations).

ASSOCIATION: Not given.
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress.

Card 2/2

VASIL'YEV, G.F.

9(3)

PHASE I BOOK EXPLOITATION   SOV/1804

Yelinson, Mordukh Il'ich, and Vasil'yev Gennadiy Fedorovich ~~~~~~~

Avtoelektronnaya emissiya (Electron Field Emmission). Moscow, Fizmatgiz,
1958. 272 p. 6,000 copies printed.

Ed.: Ye. L. Starokadomskaya; Tech. Ed: N. Ya. Murashova.

PURPOSE: This book is intended for engineers and technicians working in
electronics and can also be useful to upper division and graduate students
specializing in this field.

COVERAGE: According to the authors this book is the first systematic presentation
of the results of theoretical and experimental work in the field of electron
field emission. The authors see the possibility of practical application of this
phenomenon to radio physics and electronics. The introduction is a short ex-
position of basic data on the energy distribution of electrons in crystals and on
the nature of the potential barrier at the boundary of metals and semiconductors
(dielectrics) in a vacuum. Chapters 1 and 2 cover the theory and experimental
research in electron field emission or metals. In Chapter 3 the author examines

Card 1/8
    2

Electron Field Emission

SOV/1804

the cause of the non-stability of emission and possible ways of increasing the stability of emission characteristics. In Chapter 4 the authors examine the theory and extremely limited experimental research done in field emission of semiconductors. In Chapter 5 the authors discuss aspects of the problem of nonmetallic complex autoelectronic emitters. Chapter 6 contains data on the use of electron field emission in the cathodes of electron equipment and in electron-emission microscopes of high resolving power. M.I. Yelinson wrote the Introduction and Chapters 1, 3, and 5. Chapters 1, 4, and 6 were written by M. I. Yelinson with the cooperation of G. F. Vasil'yev. The authors give recognition to D. V. Zernov, Corresponding Member of the Academy of Sciences of the USSR, and V. A. Gor'kov, T. I. Kofanova, and A. A. Yasnopol'skaya for their help in compiling the volume. There are 243 references, 84 of which are Soviet, 35 German, 3 Japanese, and 120 English.

TABLE OF CONTENTS:

Card 2/6

SOV/109-3-7-10/23

AUTHORS: Yelinson, M.I. and Vasil'yev, G. F.

TITLE: Investigation of the Field Emission of Lanthanum Hexaboride
           (Issledovaniye avtoelektronnoy emissii geksaborida lantana)

ABSTRACT: The work described aimed at the investigation of the
           field emission of LaB$_6$, in particular, the investigation of
           the mechanism of the emission, the adsorption properties,
           and chemical stability when subjected to ion bombardment.
           The investigated samples were in the form of bars having
           dimensions 1.5 x 1.5 x 20 mm. These were shaped into sharp
           points by means of etching baths, the best results being
           obtained by electrolytic etching in concentrated sulphuric
           acid by using direct current. The points were then washed
           in ammonia.   The emissive points were then degassed;
           several methods were tried (as illustrated in Fig.2) and it
           was found that at temperatures below 1300°C a thin dielectric
           film was formed on the points; this could be eliminated if
           the samples were heated up to 2000°C. First, the emission
           patterns of the samples were taken; Fig.4a shows the
           emission pattern of a cold point, while Fig.4b illustrates
           the pattern of a sample heated to a temperature of 850°C.

Card 1/4

SOV/109-3-7-10/23

Investigation of the Field Emission of Lanthanum Hexaboride

The voltage current characteristics of various samples are shown in Fig.5. Curves a and b of Fig.5 correspond to emitter temperatures of 0° and 850°C, respectively; Curve 1 of the figure was taken immediately after heating the emitter, while Curves 2, 3, 4 and 5 were taken after 10, 30, 60 and 90 minutes after heating. A typical graph of the emission current as a function of time is illustrated by Curve 1 in Fig.6; Curve 2 in the figure shows the current for the case when the voltage was randomly interrupted. Fig.7 shows voltage-current characteristics of a LaB_6 emitter immediately after heating to a temperature of 1500°C, and then 15 minutes after the completion of the heating cycle; two similar curves for the heating cycle up to 850°C are also shown. From Fig.7 it is concluded that the work function of the emitter increases by about 60% when the sample is subjected to poisoning and, secondly, that the mass of the adsorbed gases is eliminated at 850°C. The

Card 2/4

SOV/109-3-7-10/23

Investigation of the Field Emission of Lanthanum Hexaboride

temperature dependence of the field emission current is
illustrated by the curves shown in Fig.8. A number of
samples were subjected to pulse tests at voltages ranging
from 9 to 20 kV and at current densities of the order of
10^7 A/cm^2. It was found that a vacuum-type arc discharge
was formed when the current densities were excessive. The
effect of ion bombardment on the emission was investigated
by measuring voltage u(t) for constant currents, at var-
ious pressures of the bombarding mercury. The results are
shown in Fig.9 for pressures ranging from 10^{-7} up to
3×10^{-5} mm Hg; the figure shows similar curves for tungsten
and rhenium. A large number of the voltage current charac-
teristics measured by the authors differed from the standard
straight lines, which normally characterise the field
emission of metals. Consequently, it was thought that the
emission mechanism in LaB$_6$ is different from that of
metals. It was found, however, that the main cause of the
non-linearity is the poisoning of the emitters during the
measurement of the characteristics (lasting up to 10 sec).
By employing an oscillograph the time of measurement could

Card 3/4

SOV/109-3-7-10/23

Investigation of the Field Emission of Lantanum Hexaboride

        be reduced to less than 0.5 sec and it was found that the
        voltage current curves were linear, as shown in Fig.10.
        The paper contains 10 figures and 4 references, 2 of which
        are Soviet and 2 English.

SUBMITTED: November 29, 1957.

            1. Lanthanum borides--Adsorptive properties   2. Lanthanum borides
            --Chemical properties   3. Lanthanum borides--Bombardment
            4. Ion bombardment   5. Field emission--Analysis

    Card 4/4

AUTHOR: Vasil'yev, G. F.

TITLE: On the Problem of the Theory of Field Emission of Semi-
Conductors (K voprosu o teorii avtoelektronnoy emissii
poluprovodnikov)

PERIODICAL: Radiotekhnika i elektronika, 1958, Vol 3, Nr 7,
pp 962-964 (USSR)

ABSTRACT: The expression for the emission of the potential
barrier at the boundary of a hard substance and vacuum, as
derived by Murphy, can be used to develop a theory of the
field emission in semiconductors. The transmission coeffic-
ient for the barrier is given by Eq.(1), where the various
coefficients are defined by Eqs.(2). If the parameter y in
Eq.(2) is replaced by $\varkappa y$, where $\varkappa$ is given by Eq.(3),
Eq.(1) is also valid for semiconductors. The number of elec-
trons having normal impulse components (per unit surface and
unit time) is expressed by Eq.(4) for the case of degenerate
electron gas and by Eq.(5) for non-degenerate electron gas,
in Eqs.(4) and (5), ζ denotes the Fermi level, k is the
Boltzman constant, T the absolute temperature, and n the
concentration of electrons in the conduction zone. The den-
sity of the field emission current is expressed by Eq.(9).
Consequently the current for the case of the degenerate

Card 1/2

SOV/109-3-7-16/23

On the Problem of the Theory of Field Emission of Semiconductors

electron gas is expressed by Eq.(10); this is applicable within the limits defined by Eqs.(11); the coefficients b, c and d in Eq.(10) are defined by Eqs.(12), (13) and (14). For the non-degenerate electron gas, the emission current is given by Eq.(15), where Φ is expressed by Eq.(16). The applicability of Eq.(15) is defined by the limits given by Eqs.(18). The author expresses his gratitude to M. I. Yelinson for valuable advice and discussion. There are 2 English and 1 Soviet reference.

SUBMITTED: January 20, 1958.

1. Semiconductors--Electrical properties   2. Field emission--Theory
3. Mathematics

Card 2/2

AUTHORS: Yelinson, M.I. and Vasil'yev, G.F.   SOV/109-4-4-22/24

TITLE: Certain Peculiarities of the Field Emission of Germanium
             (Nekotoryye osobennosti avtoelektronnoy emissii germaniya)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4,
             pp 728 - 729 (USSR)

ABSTRACT: The field emission of n-type germanium was investigated
             and the results are shown in Figures 2 and 3. The
             investigated samples were in the form of bars having
             dimensions 1 x 1 x 10 mm and wore prepared from a crystal
             having a resistivity of 2-10 Ωcm. The bars were
             electrolytically etched into fine points (Figure 1). A
             typical voltage-current curve of this type of emitter is
             shown in Figure 2; the middle portion of the characteristic
             is rectilinear, while in the region of small currents, the
             characteristic deviates from the linearity; also at large
             currents the characteristic is non-linear and the current
             has a tendency to increase. Figure 3 shows two voltage-
             current curves taken at two different temperatures; these
             correspond to comparatively small currents.

Card1/
1

SOV/109-4-4-24/24

AUTHORS: Vasil'yev, G.F., Politova, N.M., Shabel'nikova, A.E.,
            Pervova, L.Ya. and Yasnopol'skaya, A.A.

TITLE: Interdepartmental Seminar on Cathode Electronics (The 11th
            Meeting) (Mezhduvedomstvennyy seminar po katodnoy
            elektronike) (11-e zasedaniye)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4,
             pp 731 - 732 (USSR)

ABSTRACT: A meeting of the seminar took place on December 1, 1958
           at the Institut radiotekhniki i elektroniki AN SSSR
           (Institute of Radio-engineering and Electronics of the
           Ac.Sc.USSR). During the meeting 8 papers were read.
           Yu.G. Ptushinskiy read a paper entitled: "Kinetics of
           the Adsorption of Oxygen on the Surface of Tungsten".
           The second paper, by I.M. Dykman and S.M. Pekar,
           dealt with "The Admixture Photo-effect of Semiconductors
           in the Region of the Exciton Light Absorption". The
           paper by T.L. Matskevich was devoted to "The Problem of
           the Secondary Electron Emission of Fine Films of a
           Number of Organic Substances". The problem of "Surface
           Ionisation in a Strong Electric Field on a Surface with

Card1/2

SOV 109-4-4-24/24

Interdepartmental Seminar on Cathode Electronics (The 11th Meeting)

a Non-homogeneous Work Function" was considered by
E.Ya. Zandberg and N.I. Ionov. I.N. Bakulina and
N.I. Ionov read a paper entitled "Determination of the
Electron Attachment Energy and of the Potentials of
Atoms by the Method of Surface Ionisation". N.L.
Yasnopol'skiy and A.P. Alekseyeva dealt with the problem
of "Passage of Steady-state Currents Through a Dielectric
When the Current Carriers Are Introduced Through One of the
Contacts by Means of Electron Bombardment". The lecture
by D.A. Ganichev and K.G. Utkin discussed the following –
"The Possibility of the Analysis of the Total-energy
Distribution of Electrons in a Quasi-spherical Condenser".
The work by M.L. Kapitsa, S.A. Fridrikhov and A.R.Shul'man
dealt with an investigation of the secondary electron
emission and the characteristic energy losses of a number
of dielectrics (glass, mica, fluorite and alkali-haloid
monocrystals).

Card 2/2

USCOMM-DC-60997

VASIL'eV, G.F. Cand Phys-Math Sci (diss) " Investigation of the

electrostatic emission of certain refractory compounds with

semiconductor and metallic conductivity," Tashkent, 1960, 14 pp

(Tashkent State University im V. I. Lenin) (KL, 39-60, 113)

08163

S/109/60/005/011/012/014

E140/E485

9,3140 (2301, 1003, 1140)

AUTHOR: Vasil'yev, G.F.

TITLE: Influence of the Shape of Potential Barrier at the
            Emitter-Vacuum Interface and the Electric Field
            Distribution Over the Emitter Surface on the Shape of
            Volt-Ampere Field-Emission Characteristics

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.11,
            pp.1857-1861

TEXT: Recently published work (Ref.1) have shown anomalous
behaviour of the volt-ampere field emission characteristics in the
neighbourhood of field strength 8.10^7 V/cm.   The majority of
authors explain the observed behaviour by the presence of space
charge above the emitter surface.   The present article is based on
the image-field approach to this problem, calculating the image
forces, however, with a correction for the atomic structure of the
emitter.   Further, the field strength at the emitter surface is
calculated on the basis of an analytic approximation to the
commonly used point emitter geometry.   It is shown that the purely
geometric approach used here can, at least, partially explain the

Card 1/2

88163
S/109/60/005/011/012/014
E140/E485

Influence of the Shape of Potential Barrier at the Emitter-Vacuum
Interface and the Electric Field Distribution Over the Emitter
Surface on the Shape of Volt-Ampere Field-Emission Characteristics

anomalous behaviour observed.   There are 2 tables and
15 references: 4 Soviet and 11 non-Soviet.

SUBMITTED: March 31, 1960

Card 2/2

20421

S/109/60/005/012/019/035
E192/E382

9.4300 (1043, 1143, 1150, 1161)

AUTHORS: Yelinson, M.I., Zhdan, A.G. and Vasil'yev, G.F.

TITLE: Interpretation of the Shape of Voltage-current Characteristics of the Field Emission in Semiconductors

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol. 5, No. 12, pp. 2004 - 2008

TEXT: A typical voltage-current characteristic in $\lg j$ and $1/E$ coordinates for metals is in the form of a straight line for a wide range of currents i and voltages u. Such a characteristic is shown in Fig. 1. However, at current densities $j > 7 \times 10^6$ A/cm^2 a considerable deviation from the linearity is observed. Thus, a characteristic bend appears in the vicinity of the point A (Fig. 1) which occurs at lower j. Further, in the vicinity of the point B the rate of the current increase becomes greater again. The deviation at the point A can be explained by the effect of the space charge of the emitted electrons and by the deviation of the true form of the potential barrier

Card 1/6

20421

S/109/60/005/012/019/035
E192/E382

Interpretation of the Shape of Voltage-current Characteristics
of the Field Emission in Semiconductors

from the classical law of the image forces. Also it should
be taken into account that at high electron energies the
transfer coefficient of the potential barrier is given by

$$
\left[1 + \exp\left[\frac{4 \sqrt{2} \; m^{1/2} \; |E_x|^{3/2}}{\hbar eE} (\cdot) (y) \right] \right]^{-1} .
$$

The reason for the rapid increase of j in the vicinity
of point B is not yet clear. For the semiconductors
a typical voltage current characteristic for field emission
at low temperatures is also in the form of a straight line.
However, very often the experimental characteristics deviate
from rectilinear form and these deviations can be of various
types. Such characteristics for the emitters made of

Card 2/6

20421

S/109/60/005/012/019/035
E192/E382

Interpretation of the Shape of Voltage-current Characteristics
of the Field Emission in Semiconductors

SiO_2 + C and Al_2O_3 + C were investigated in an earlier work
(Ref. 2). It was found that the possible reason for the
deviation of these characteristics from linearity is the
influence of the strong internal field in the semiconductor,
which changes the distribution function and the electron con-
centration. The characteristics of SiC, Ge and ZnS (taken
from Refs. 3, 4, and 5) are also shown. The peculiarity of
these three characteristics is the deviation from linearity
at small currents. A new type of voltage-current characteristic
was discovered. The materials used in the investigation were
semiconductors based on SiO_2 and Al_2O_3. In order to make these
emitters conducting, SiO_2 was activated with carbon and tungsten
was added to Al_2O_3. The particular feature of these substances
is their low electron affinity coefficient $\chi \approx$ 1 eV (Ref.2).

Card 3/6

20421
S/109/60/005/012/019/035
E192/E382

Interpretation of the Shape of Voltage-current Characteristics
of the Field Emission in Semiconductors

The voltage-current characteristics of three emitters made
from SiO_2 + C is shown in Fig. 6. It is seen that the
characteristics deviate from linearity at low currents
(see point G). These characteristics are novel in that the
bend at point G has nothing to do with the barrier produced
by the presence of the surface charges since this is overcome
at comparatively low electric fields. This is due to the
fact that emitters have a very high resistance and in the
investigated range of currents they have considerable internal
fields. Secondly, the space-charge effect is insignificant
due to the fact that the emitted currents are very low. In
general, the characteristics of the type shown in Fig. 6
can be obtained at higher temperatures; in fact, at room
temperatures the characteristics are often rectilinear while
at higher temperatures they have the shape shown in Fig. 6.

Card 4/6

20421

S/109/60/005/012/019/035

E192/E382

Interpretation of the Shape of Voltage-current Characteristics
of the Field Emission in Semiconductors

The shape of the characteristics can be explained if it is
assumed that $\Theta(y) \simeq 0$, where Θ is the Nordheim function.
This means that the potential barrier at the boundary between
the semiconductor and vacuum practically disappears and the
exponential emission law is replaced by a comparatively slowly
increasing function such as $i = kE^2$.
There are 7 figures and 6 references: 3 Soviet and
3 non-Soviet.

SUBMITTED: March 12, 1960

Card 5/6

20421

Interpretation of the Shape of Voltage-current Characteristics of the Field Emission in Semiconductors
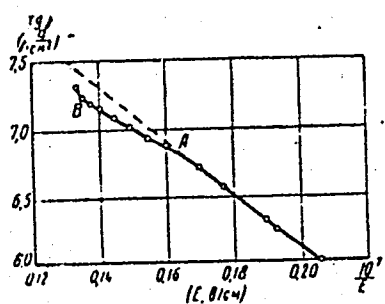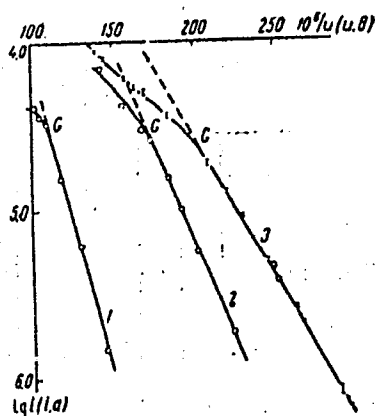
Fig. 1:

Fig. 6:

Card 6/6

VASIL'YEV, G.F.

Electric field penetration in a semiconductor. Radiotekh. i
elektron. 6 no.10:1741-1744 O '61.   (MIRA 14:9)
              (Semiconductors) (Electric fields)

L 15370-66 EWT(1)/EWP(e)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/GG

ACC NR: AP6004471   SOURCE CODE: UR/0048/66/030/001/0071/0074

AUTHOR: Markov,V.S.; Prokopenko,V.S.; Pak,N.G.; Vasil'yev, G.G.

ORG: Krasnoyarsk State Pedagogical Institute (Krasnoyarskiy gosudarstvennyy pedagogicheskiy institut)

TITLE: Oscilloscope display of the hysteresis loops of separate parts of a film /Transactions of the Second All-Union Symposium on the Physics of Thin Ferromagnetic Films held at Irkutsk 10 July to 15 July, 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.30, no. 1, 1966, 71-74

TOPIC TAGS: ferromagnetic film, magnetic thin film, Faraday effect, Kerr effect, hysteresis loop, magnetic anisotropy,

ABSTRACT: Equipment employing the Faraday or Kerr effect is described with which one can display on an oscilloscope screen the hysteresis loop of a small region of a ferromagnetic film. In the authors' apparatus a spot of polarized light from several millimeters to several tens of microns in diameter was focused on the investigated film and the reflected or transmitted light (depending on the thickness of the film) was collected, passed through an analyzer, and focused on a photomultiplier. The signal from the photomultiplier was applied to the vertical axis of an oscilloscope, to the horizontal axis of which there was applied a signal proportional to the magnetizing field. A number of exploratory experiments were performed and hysteresis loops are

Card 1/2

L 15370-66

ACC NR: AP6004471

presented. By recording both the longitudinal and transverse hysteresis loops with different orientations of the film it is possible to map the direction of the anisotropy axis in different parts of the film. The accuracy with which the direction of the local anisotropy axis can be determined is at least great as can be obtained with the technique of D.O.Smith (J. Appl. Phys., 32, 70 (1961)), which requires observation of the domain structure. Orig. art. has: 8 figures.

SUB CODE: 20   SUBM DATE: 00   ORIG. REF: 001   OTH REF: 001

Card 2/2

S/122/61/000/011/003/006
D221/D304

AUTHOR: Vasil'yev, G. G.

TITLE: The manufacture of plastic dies

PERIODICAL: Vestnik mashinostroyeniya, no. 11, 1961, 54 - 58

TEXT: The dies made of plastic material based on epoxy re-
sin are economical for small batch production, although the plastic
is more expensive than metal. Their life can be extended by metal
spraying, and the use of copy millers for machining these tools is
eliminated. The labor involved is about half of that required for
the manufacture of metal dies, because plastic tools are cast.
This is done by making a replica in plaster of Paris of the master
model. The author describes in detail the actual process, as well
as the casting of the form. In the case of phenolic resin, it is
cooled to 18-20°, when a hardening agent, called the contact of
Petrov is introduced. The composition is mixed and its temperature
is maintained by water circulation in the jacket of the mixer.

Card 1/3

S/122/61/000/011/003/006
D221/D304

The manufacturing of plastic dies

After casting it is held for a day in room temperature, dried and heat treated at 50⁰ during 24 hours, 60⁰ -for 12 hours, and 80⁰ . 12 hours. The cooling takes place at room temperature. The dies made of phenolic resins are cheaper than those based on epoxy materials, however, their life is shorter, and their use is limited to shallow drawing. The plastic ТЛК - Э (TLK-E) is made of resin based on cellulose ester, and is applied for punches in stamping sheet metal parts in board hammers. The working parts of dies made in acrylic resins are reinforced with glass fibres, and form ACT - T (AST-T) plastic. Whenever low specific pressures are required for stamping, then plastic dies are expedient. The plastic section of the tool is joined to the metal part by bolts or epoxy resin. Their machining, when this arises, is executed in normal machine tools. The corrosive action of their chips on machine tool components should be taken into account. The high quality epoxy resin facing of the working parts of dies is at present widely used. A forming tool of this kind is designed for operation in a board drop hammer.

Card 2/3

The manufacturing of plastic dies

S/122/61/000/011/003/006
D221/D304

The epoxy resin adheres well to metal and there is no need for
bolt fastening. A hardly noticeable contraction after casting of
the form dispenses almost entirely with machining. The author pro-
vides details of casting process, as well as the composition of the
facing, and a note is made that dies should be made with harder
surface than punches. The reduction of cost can be attained by
introducing cores of wood, metal or cheap plastic. The practice
of the "Karosa" Factory (ChSSR) in this respect is recalled. As
examples, some tool designs are illustrated and the procedure of
die manufacture is described. Details are also given of the method
of metal spraying which ensures a longer life of the tool. Finally
the process of facing with plastic of large dies with core made of
concrete is discussed. There are 12 figures.

Card 3/3

PA 28/49T103

VASIL'YEV, G. G.

Oct 48

USSR/Metals
    Steel Plate
    Strain Measurements

"Determination of the Conditional Yield Limit for High Durability Steels, Rolled Into Plate," G. G. Vasil'yev, Magnitogorsk Metal Combine, 6 pp

"Zavod Lab" Vol XIV, No 10

Complains that old methods of testing subject steel plate are either too slow and laborious or cannot be used for relatively thin plate. Discusses method using Amsler-type machine and amplifying the strain reading 20 times for closer gauging. Method was tested and found much faster, and accurate within 2%.

28/49T103

TARASENKO, A.Ye.; VASIL'YEV, G.G.

    Conveyer-plow for shield protected coal mining. Ugol' 38
no.12:52-53 '63.
                                  (MIRA 17:5)

SOV/67-59-5-4/30

14(1)
AUTHOR: Vasil'yev, G. G., Engineer

TITLE: On a Uniform Consumption of Liquid Oxygen in Gasifiers
              Connected in Parallel

PERIODICAL: Kislorod, 1959, Nr 5, pp 15 - 19 (USSR)

ABSTRACT: In order to ensure a uniform consumption of liquid oxygen
              in 4 gasifiers working in parallel, the coefficient of non-
              uniformity $K = Q_{max}/Q_{min}$ is not to exceed the value of 1.2.
              Q_{max} and Q_{min}, respectively, denote the maximum and minimum
              consumption of liquid oxygen per unit of time. To investigate
              the working conditions for guaranteeing this value K, labo-
              ratory investigations were carried out. The operation scheme
              of the gasifiers has already been described in a previous
              paper. The arrangement of the four gasifiers connected in
              parallel is shown in figure 1. Besides the common gas outlet
              pipe, also a connecting gas pressure expansion pipe is in-
              stalled. The reasons for the nonuniform working were investi-
              gated, and explained by the construction of the individual
              gasifiers. They work at a somewhat different pressure thus

Card 1/3